

Andreas H. W. Küpper

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Profile

German astrophysicist with more than 10 years of experience in

- data mining/munging/analysis, machine learning, and statistical modeling,
- programming, scripting, and high-performance computing,
- leadership, advising, and communication.

Relevant Professional Experience

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|---|-------------|
| Columbia University, New York, NY, <i>Hubble Research Fellow</i> | Since 2013 |
| <ul style="list-style-type: none">• Measured the mass of the Milky Way by fitting 10^7 tidal stream models to data.• Studied dark matter substructure by producing and analyzing a data set of 10^9 stars. | |
| Yale University, New Haven, CT, <i>Research Fellow</i> | 2013 |
| <ul style="list-style-type: none">• Developed a Bayesian framework in Python/C for statistical modeling of tidal streams. | |
| Universität Bonn, Germany, <i>Postdoctoral Researcher</i> | 2011 – 2013 |
| <ul style="list-style-type: none">• Invented a now widely used algorithm for efficient statistical modeling of tidal streams. | |
| Universität Bonn, Germany, <i>Graduate Student Researcher</i> | 2007 – 2011 |
| <ul style="list-style-type: none">• Studied the formation of tidal streams with high-performance N-body simulations.• Published a popular C/Fortran code for generating star cluster models. | |

Education

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| Universität Bonn, Germany, PhD in Astronomy, <i>summa cum laude</i> | 2007 – 2011 |
| Penn State University, PA, Bootcamp on Astrostatistics with R | June 2010 |
| Universität Bonn, Germany, Diplom in Physics (MSc equivalent) | 2001 – 2007 |

Expertise

Data analysis, machine learning, and statistical modeling

- Bayesian inference modeling, Markov-Chain Monte Carlo, maximum likelihood estimation,
- logistic/linear/non-linear regression, kernel density estimation, k-nearest neighbor algorithms,
- minimum spanning tree algorithms, linear/non-linear least-square fitting, KS testing,
- bootstrapping/jackknife resampling, principal component analysis, Gaussian mixture models

Programming, scripting, and high-performance computing

- Python (NumPy, SciPy, matplotlib, Scikit-learn, Pandas), C, R, Linux scripting,
- Excel, Octave, JavaScript, Fortran, OpenMP, MPI, CUDA

Leadership, advising, and communication

- organization/coordination of 10+ larger meetings and workshops, student/postdoc representative,
- advisor to 8 PhD/MSc students, 50+ presentations at conferences/public events, 20+ publications